

CLAIMS

What is claimed is:

1. Apparatus for reprogramming a programmed controller of a power driven wheelchair, said apparatus comprising:

a reprogrammable, non-volatile memory programmed with a plurality of programs executable by said controller to operate said wheelchair, said non-volatile memory disposed at said wheelchair and coupled to said wheelchair controller;

a general-purpose computer programmed to reprogram said non-volatile memory while disposed at said wheelchair, said programmed computer for storing main programs for use in reprogramming said non-volatile memory;

means for coupling said programmed computer to said wheelchair controller for accommodating an exchange of data therebetween; and

wherein said wheelchair controller being operative to communicate with said programmed computer through said coupling means to reprogram said non-volatile memory with said main programs while said non-volatile memory is disposed at said wheelchair.

2. The apparatus of claim 1 wherein the non-volatile memory includes predetermined memory locations for storing coded words; and wherein the wheelchair controller is operative to execute one of the programs of the plurality of programs stored in the non-volatile memory to determine if another program of the plurality is acceptable for execution based on said coded words stored in said predetermined memory locations.

3. The apparatus of claim 2 wherein the one program is executed by the wheelchair controller upon being powered up.

4. The apparatus of claim 3 wherein during the execution of the one program, if the other program is determined to be unacceptable for execution, the wheelchair controller enters a wait loop waiting for reprogramming data from the programmed computer.

5. The apparatus of claim 3 wherein during the execution of the one program, if the other program is determined to be acceptable, the wheelchair controller is permitted to divert

program execution to other program stored in the non-volatile memory to operate the wheelchair.

6. The apparatus of claim 5 wherein during the execution of the other program, the wheelchair controller is operative to monitor if reprogramming data is being communicated thereto through the coupling means.

7. The apparatus of claim 1 wherein the non-volatile memory comprises a flash memory.

8. The apparatus of claim 1 wherein the general-purpose programmed computer comprises a personal computer.

9. The apparatus of claim 1 wherein the coupling means comprises a joystick unit of the wheelchair, said joystick unit being coupled to the wheelchair controller and operative to communicate therewith for operating the wheelchair.

10. The apparatus of claim 9 wherein the programmed computer is coupled to the wheelchair controller through a charger port of the joystick unit for communicating reprogramming data with the wheelchair controller bit serially from a communication port thereof.

11. Method of reprogramming a programmed controller of a power driven wheelchair, said method comprising the steps of:

coupling a reprogrammable, non-volatile memory programmed with a plurality of programs to said wheelchair controller;

determining if said plurality of programs of the non-volatile memory are to be reprogrammed;

coupling a programmed computer to said wheelchair controller based on the result of the determining step, said computer being programmed to reprogram said non-volatile memory through said wheelchair controller;

displaying an interactive programming screen image on a display of the programmed computer; and

interacting with said programming screen image to control reprogramming said non-volatile memory through said wheelchair controller.

12. The method of claim 11 wherein the step of interacting includes interacting with the programming screen image to download main programs of the non-volatile memory into a memory of the programmed computer from a portable memory device.

13. The method of claim 11 wherein the step of interacting includes interacting with the programming screen image to download main programs of the non-volatile memory into a memory of the programmed computer from a web site over the internet.

14. The method of claim 11 wherein the step of interacting includes interacting with the programming screen image to erase portions of non-volatile memory prior to reprogramming thereof.

15. The method of claim 11 wherein the step of interacting includes interacting with the programming screen image to download main programs of the non-volatile memory into a memory of the programmed computer and to communicate said main programs from the programmed computer to the wheelchair controller for reprogramming the non-volatile memory.

16. Method of reprogramming a programmed controller of a power driven wheelchair, said method comprising the steps of:

- partitioning a reprogrammable, non-volatile memory into at least two sections;
- programming one section of said non-volatile memory with a boot program executable by the wheelchair controller;
- programming another section of said non-volatile memory with main programs executable by said wheelchair controller to operate said wheelchair;
- executing said boot program by said wheelchair controller to determine if said main programs of the non-volatile memory are to be reprogrammed;
- coupling a programming device to said wheelchair controller based on the result of said determination; and

interacting with said programming device to control a reprogramming of the main programs of said non-volatile memory through said wheelchair controller.

17. The method of claim 16 including the step of programming a plurality of coded words into predetermined locations of the another section of the non-volatile memory; and wherein the step of executing includes executing the boot program by the wheelchair controller to determine if the main programs are acceptable for execution by the wheelchair controller based on said coded words programmed into said predetermined locations.

18. The method of claim 17 including the step of waiting for reprogramming data from the programming device when the main programs are determined to be unacceptable for execution by the wheelchair controller.

19. The method of claim 17 including the step of diverting program execution by the wheelchair controller from the boot program to the main programs when the main program are determined to be acceptable for execution by the wheelchair controller.

20. The method of claim 16 including the steps of executing the main programs by the wheelchair controller; and during said main program execution, determining if the programming device is coupled to the wheelchair controller.